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Robert P. Basil

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EXAMINER

DOAN, TRANG T

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/010,894	<b>Applicant(s)</b> BASIL ET AL.	
	<b>Examiner</b> Trang Doan	<b>Art Unit</b> 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/03, 07/02</u> . | 6) <input type="checkbox"/> Other: _____  |

1. Claims 1-22 have been examined.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim s 1-2, 4, 11 and 14 rejected under 35 U.S.C. 102(e) as being anticipated by Heer et al. (6028933) (hereinafter Heer).

4. Referring to claims 1 and 14, Heer teaches:

A. the server receiving a scrambled upstream communication from a first client modem (Heer: see figures 1 and 23, column 8 lines 40-52);

B. the server unscrambling a scrambled portion of the upstream communication containing a new key for the first client modem using a previous seed for the first client modem based on a previous key for the first client modem received in a previous upstream communication from the first client modem (Heer: see figure 29, column 26 lines 1-67 and column 34 lines 12-23 and column 36 lines 40-67 and column 37 lines 1-15);

C. the server storing information sufficient to create a new seed for the first client modem based on the new key for the first client modem based on the unscrambled

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contents of the upstream communication (Heer: column 34 lines 24-41 and column 36 lines 40-67 and column 37 lines 1-15);

D. the server scrambling at least a portion of the next downstream communication to a second client modem with scrambling based on a seed for the second client modem based on a key for the second client modem, where in the key for the second client modem is unrelated to the key for the first client modem (Heer: see figure 1 (items 140a-c) column 26 lines 28-48);

E. the server scrambling at least a portion of the next downstream communication to the first client modem with scrambling based on the new seed for the first client modem based on the new key for the first client modem (Heer: column 34 lines 12-41 and column 36 lines 40-67 and column 37 lines 1-15);

F. the first client modem receiving the next downstream communication to the first client modem (Heer: see figure 2, column 8 lines 4-18);

G. the first client modem unscrambling the scrambled portion of the next downstream communication to the first client modem with the new seed for the first client modem based on the new key for the first client modem (Heer: column 8 lines 40-52 and column 26 lines 28-48);

H. the first client modem creating a next upstream communication containing a next key for the first client modem (Heer: see figure 31, column 26 lines 28-48 and column 36 lines 21-39);

I. the first client modem storing information sufficient to create a next seed for the first client modem based on the next key for the first client modem (Heer: column 34 lines 24-41 and column 36 lines 40-67 and column 37 lines 1-15); and

J. the first client modem scrambling at least a portion of the next upstream communication using the new seed for the first client modem based on the previously communicated new key for the first client modem (Heer: column 34 lines 12-41 and column 36 lines 16-39).

5. Referring to claim 2, Heer teaches wherein the new seed for the first client modem equals the new key for the first client modem (Heer: column 26 lines 28-48).

6. Referring to claim 4, Heer teaches wherein the new key for the first client modem is a random number generated by the first client modem and not a transmission check word (Heer: column 26 lines 49-66 and column 32 lines 12-16).

7. Referring to claim 11, Heer teaches wherein a scrambled value is passed with one communication and the value is used to alter the DVB randomization of the next communication whereby the controlled variation in the DVB randomization provides a layer of security to protect the next communication from an eavesdropper as the eavesdropper would need the passed value in order to reverse the non-standard DVB randomization (Heer: column 26 lines 28-48).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heer in view of Rothenberg (5432850) (hereinafter Roth).

10. Referring to claim 3, Heer does not explicitly disclose wherein the new key for the first client modem is a transmission check word used for the purpose of testing the accuracy of the upstream transmission, such that the new key for the first client modem is transmitted with the upstream communication without adding to the overhead.

However, Roth teaches wherein the new key for the first client modem is a transmission check word used for the purpose of testing the accuracy of the upstream transmission, such that the new key for the first client modem is transmitted with the upstream communication without adding to the overhead (Roth: column 3 lines 47-65 and column 4 lines 1-12).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Roth into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to Heer because adding a key to the data frame will help the receiver to decrypt the encrypted data sequence by employing the local address of the receiver as at least part of a decryption key (Roth: column 1 lines 40-44).

11. Referring to claim 5, Heer does not explicitly disclose wherein the scrambled portion of the upstream communication includes a portion of the data packet header.

However, Roth teaches wherein the scrambled portion of the upstream communication includes a portion of the data packet header (Roth: column 3 lines 38-57).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Roth into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to Heer because encrypting a portion of the datagram's header will help the receiver to decrypt the encrypted data sequence by employing the local address of the receiver as at least part of a decryption key (Roth: column 1 lines 40-44).

12. Referring to claim 6, Heer teaches wherein the scrambled portion of the upstream communication includes a field conveying the length of a variable length data packet (Heer: column 6 lines 53-67 and column 7 lines 1-61).

13. Claims 7, 10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heer in view of Jam et al. (5787483) (hereinafter Jam).

14. Referring to claim 7, Heer does not explicitly disclose wherein first client modem unscrambles the scrambled portion of the next downstream communication to the first client modem with the new seed for the first client modem based on the new key for the first client modem only when a field in the next downstream communication lacks a signal to use a default seed based on a default key. However, Jam teaches wherein first client modem unscrambles the scrambled portion of the next downstream communication to the first client modem with the new seed for the first client modem based on the new key for the first client modem only when a field in the next

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downstream communication lacks a signal to use a default seed based on a default key (Jam: column 13 lines 50-57 and column 14 lines 1-67).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Jam into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to Heer because the field in the downstream communication provides the information of the key. Since the communication between transmitter and receiver uses changing keys, there is a need to synchronize the key between them.

15. Referring to claim 10, Heer does not explicitly disclose the preliminary steps of exchanging communications between the server and the first client modem, a portion of the preliminary communications scrambled with a default seed until the server has stored information sufficient to create an initial first client modem seed based on an initial first client modem key. However, Jam teaches the preliminary steps of exchanging communications between the server and the first client modem, a portion of the preliminary communications scrambled with a default seed until the server has stored information sufficient to create an initial first client modem seed based on an initial first client modem key (Jam: column 13 lines 50-57 and column 14 lines 58-67).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Jam into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to Heer because the field in the downstream communication provides



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the information of the key. Since the communication between transmitter and receiver uses changing keys, there is a need to synchronize the key between them.

16. Referring to claim 12, Heer does not explicitly disclose wherein: the server sent a multicast address key and a multicast address in the next downstream communication to the first client modem; the server sent the same multicast address key and the same multicast address in the next downstream communication to the second client modem; and further comprising the step of: the server creating a multicast communication addressed to a multicast group comprising the first client modem and the second client modem; the server sending the multicast communication after scrambling a portion of the multicast communication with a seed based on the multicast address key. However, Jam teaches the server sent a multicast address key and a multicast address in the next downstream communication to the first client modem (Jam: column 14 lines 1-4 and lines 50-57); the server sent the same multicast address key and the same multicast address in the next downstream communication to the second client modem (Jam: column 14 lines 1-4 and lines 40-57); and further comprising the step of: the server creating a multicast communication addressed to a multicast group comprising the first client modem and the second client modem; the server sending the multicast communication after scrambling a portion of the multicast communication with a seed based on the multicast address key (Jam: column 24 lines 32-56).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Jam into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to

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make modification to Heer because in order to protect the communication, the data must be encrypted. Only the right key can be able to decrypt the encrypted data, the header of the data packet provides the information about the encryption/decryption key. Since the communication between transmitter and receiver uses changing keys, there is a need to synchronize the key between them.

17. Referring to claim 13, Heer does not explicitly disclose wherein the server scrambles at least a portion of the next downstream communication to the first client modem with a seed based on both: the new key for the first client modem, and an earlier key for the first client modem received before the new key for the first client modem. However, Jam teaches wherein the server scrambles at least a portion of the next downstream communication to the first client modem with a seed based on both: the new key for the first client modem, and an earlier key for the first client modem received before the new key for the first client modem (Jam: see figure 6(c) and column 14 lines 58-67).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Jam into Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to Heer because in order to protect the communication, the data must be encrypted. Only the right key can be able to decrypt the encrypted data, the header of the data packet provides the information about the encryption/decryption key. Since the communication between transmitter and receiver uses changing keys, there is a need to synchronize the key between them.

18. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heer in view of Jam and further in view of Roth.

19. Referring to claim 8, Heer in view of Jam does not explicitly teach where the default key is based on the address of the first client modem. However, Roth teaches where the default key is based on the address of the first client modem (Roth: column 3 lines 47-57).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Roth into the combination of Heer and Jam's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to the combination of Heer and Jam because the only station can get access into the encrypted data is the one that has the right address. Without the right address, no one can decrypt the encrypted data to prevent unauthorized stations attempting to access the data.

20. Referring to claim 9, Heer in view of Jam does not explicitly teach wherein the previous key for the first client modem received in a previous upstream communication from the first client modem was sent with scrambling based on the default key. However, Roth teaches wherein the previous key for the first client modem received in a previous upstream communication from the first client modem was sent with scrambling based on the default key (Roth: column 3 lines 47-57)

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Roth into the combination of Heer and Jam's invention for secure data transmission. The ordinary skilled person

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would have been motivated to make modification to the combination of Heer and Jam because the only station can get access into the encrypted data is the one that has the right address. Without the right address, no one can able to decrypt the encrypted data to prevent unauthorized stations attempting to access the data.

21. Claims 15 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jam in view of Heer.

22. Referring to claim 15, Jam teaches:

A. a server identifies the existence and the address of first client modem on a shared transmission media (Jam: see figure 1, column 11 lines 24-29);

B. the server creates and transmits a downstream communication addressed to the first client modem with a portion of the downstream communication scrambled twice based on two default scrambling seeds, the downstream communication containing a control field indicating that the default seeds were used (Jam: column 13 lines 59-67 and column 14 lines 1-7 and lines 58-67);

C. the first client modem receives the downstream communication and recognizes that the default seeds were used (Jam: column 24 lines 32-56 and column 25 lines 19-30 and column 26 lines 17-25);

D. the first client modem unscrambles the downstream communication using the default go seeds (Jam: see figure 3 and column 6 lines 17-65 and column 24 lines 45-64 and column 25 lines 19-30);

E. the first client modem creates and transmits an upstream communication, before transmission the upstream communication scrambled twice with the two default

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seeds, the scrambled portion of the upstream communication containing a key created by the first client modem (Jam: column 15 lines 34-58 and column 25 lines 19-30 and column 26 lines 17-25);

F. the server receives the upstream communication and the server unscrambles the scrambled portion of the upstream communication using the default seeds and stores the key created by the first client modem (Jam: column 6 lines 17-22 and column 13 lines 50-53);

G. the server creates and transmits a downstream communication addressed to the first client modem with the control field indicating that the communication is scrambled using one default scrambling seed and one seed based on the key created by the first client modem, a portion of the downstream communication scrambled once with one default seed and once with one seed based on the key created by the first client modem, the scrambled portion of the downstream communication including a key created by the server for communication with the first client modem (Jam: column 6 lines 17-22 and column 14 lines 5-7);

H. the first client modem receives the downstream communication and reads the control field (Jam: column 14 lines 5-7 and column 24 lines 42-64);

I. the first client modem unscrambles the downstream communication using the one default seed and one seed based on the last transmitted key created by the first client modem (Jam: see figure 3 and column 6 lines 17-65 and column 24 lines 45-64 and column 25 lines 19-30);

J. the first client modem stores the key created by the server for communication with the first client modem (Jam: column 26 lines 12-25);

K. the first client modem creates and transmits an upstream communication, before transmission a portion of the upstream communication including the new key created by the first client modem is scrambled twice using the one seed based on the last transmitted key created by the first client modem and one seed based on the last transmitted server created key for communication with the first client modem (Jam: column 15 lines 34-58 and column 25 lines 19-30 and column 26 lines 17-25);

L. the server receives the upstream communication, and unscrambles the upstream communication using one seed based on the previously stored key created by the first client modem and one seed based on the last transmitted server created key for communications with the first client modem (Jam: column 6 lines 17-22 and column 13 lines 50-53);

M. the server stores the last transmitted key created by the first client modem (Jam: column 26 lines 12-25);

N. the server creates and transmits a downstream communication addressed to the first client modem with the control field indicating that the communication is scrambled using one seed based on the last transmitted key created by the first client modem and one seed based on the last transmitted server created key for communication with the first client modem; a portion of the downstream communication scrambled once with one seed based on the last transmitted key created by the first client modem and once with one seed based on the last transmitted server created key

for communication with the first client, the scrambled portion of the downstream communication containing a new server created key for communication with the first client modem (Jam: column 6 lines 17-22 and column 14 lines 5-7);

O. the first client modem receives the downstream communication and reads the control field (Jam: column 14 lines 5-7 and column 24 lines 42-64);

P. the first client modem unscrambles the downstream communication using one seed based on the previously stored server created key for communication with the first client modem and one seed based on the last transmitted key created by the first client modem (Jam: see figure 3 and column 6 lines 17-65 and column 24 lines 45-64 and column 25 lines 19-30);

Q. the first client modem stores the last transmitted server created key for communication with the first client modem (Jam: column 26 lines 12-25),

REPEAT steps K through G; UNTIL detecting a break in the communications between the first client modem and the server; THEN GOTO Step B (Jam: column 18 lines 21-28 and column 38 lines 11-67 and column 39 lines 1-2). Jam does not explicitly disclose the double scrambling of communications sent to and from a particular client modem. However, Heer teaches triple-DES encryption scheme can be used in the encryption (Heer: column 2 lines 62-67 and column 3 lines 1-10 and column 26 lines 28-48 and 61-66: triple-DES uses three different keys).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Heer into Jam's invention to improve security and protect the transmitted data packets. The ordinary skilled person

would have been motivated to make modification to Jam because to prevent unauthorized parties intercepting to the communication. Triple-DES encryption scheme is used to ensure proper protection of the content of the data packet.

23. Referring to claim 19, Jam teaches:

A. Unscramble the scrambled portion of the incoming communication with the a stored key created by the first device and a stored key created by the second device (Jam: column 26 lines 12-25);

B. Store key created by the second device received in scrambled portion of incoming communication (Jam: column 24 lines 30-56);

C. Create key created by the first device and create the outgoing communication (Jam: column 14 lines 58-67 and column 15 lines 34-58 and column 25 lines 19-30 and column 26 lines 17-25);

D. Scramble portions of the outgoing communication including the key created by the first device with the stored key from the first device and the stored key from the second device (Jam: column 15 lines 34-58 and column 25 lines 19-30 and column 26 lines 17-25);

E. Store key created by the first device (Jam: column 6 lines 17-22 and column 13 lines 50-53); and

F. Send outgoing communication (Jam: column 15 lines 9-58).

Jam does not explicitly disclose the dual key scrambling of communications sent to and from a particular client modem. However, Heer teaches triple-DES encryption



scheme can be used in the encryption (Heer: column 2 lines 62-67 and column 3 lines 1-10 and column 26 lines 28-48 and 61-66: triple-DES uses three different keys).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Heer into Jam's invention to improve security and protect the transmitted data packets. The ordinary skilled person would have been motivated to make modification to Jam because to prevent unauthorized parties intercepting to the communication. Triple-DES encryption scheme is used to ensure proper protection of the content of the data packet.

24. Referring to claim 20, Jam in view of Heer teaches wherein: the stored key created by the first device used in the scrambling and unscrambling operations is the most recently stored key created by the first device, and the stored key created by the second device used in the scrambling and unscrambling operations is the most recently stored key created by the second device (Jam: column 26 lines 12-25).

25. Referring to claim 21, Jam in view of Heer further teaches wherein the stored key created by the first device used in the scrambling and unscrambling operations is not the most recently stored key created by the first device (Jam: column 24 lines 42-56 and column 25 lines 19-30 and column 26 lines 17-25).

26. Referring to claim 22, Jam in view of Heer further teaches wherein the stored key created by the second device used in the scrambling and unscrambling operations is not the most recently stored key created by the second device (Jam: column 24 lines 42-56 and column 25 lines 19-30 and column 26 lines 17-25).

27. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jam as in view of Heer, and further in view of Roth.

28. Referring to claim 16, Jam in view of Heer does not explicitly disclose wherein the key created by the first client modem is a transmission check word. However, Roth teaches wherein the key created by the first client modem is a transmission check word (Roth: column 3 lines 47-65 and column 4 lines 1-12).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have applied the teaching of Roth into the combination of Jam and Heer's invention for secure data transmission. The ordinary skilled person would have been motivated to make modification to the combination of Jam and Heer because adding a key to the data frame will help the receiver to decrypt the encrypted data sequence by employing the local address of the receiver as at least part of a decryption key (Roth: column 1 lines 40-44).

29. Referring to claim 17, Jam in view of Heer in view of Roth further teaches wherein at least one of the default seeds is used solely for communications with the first client modem (Jam: column 13 lines 50-57).

30. Referring to claim 18, Jam in view of Heer in view of Roth further teaches wherein at least one of the default seeds is derived from an address of the first client modem (Jam: column 24 lines 30-56).

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang Doan whose telephone number is (571) 272-0740. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Trang Doan  
Examiner  
Art Unit 2131

T.D.  
02/27/2006

  
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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100